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Remarks

The following remarks are responsive to the Office Action mailed July 21, 2003. Claims 14-28 and 31 have been allowed. Claims 1, 2, 4, 6, 9-11, 14, 16, 19-21, 24, 25, 27 and 29-31 have been amended. After entry of this amendment, claims 1-31 are pending.

Applicants submit that the amendments to the specification and claims are supported by the specification and claims as originally filed and do not introduce new matter.

Support for the amendment to the specification at paragraphs [0040], [0042], and [0043] merely involve capitalization of the trademark CREO TRENDSETTER and addition of generic terminology. Entry of the amendment to the specification at paragraphs [0040], [0042], and [0043] is respectfully requested.

Support for the amendment to Claim 1 can be found at paragraph [0012].

Support for the amendment to Claim 2 can be found at paragraphs [0012] and [0015].

Support for the amendment to Claim 4 can be found at paragraph [0031].

Support for the amendment to Claim 6 can be found at paragraph [0021].

Support for the amendment to Claim 9 can be found at paragraph [0012] and [0022].

Support for the amendment to Claim 10 can be found at paragraph [0012] and [0027].

Support for the amendment to Claim 11 can be found at paragraph [0027].

Support for the amendment to Claim 14 can be found at paragraph [0012].

Support for the amendment to Claim 16 can be found at paragraph [0021].

Support for the amendment to Claim 19 can be found at paragraph [0012] and [0022].

Support for the amendment to Claim 20 can be found at paragraph [0012] and [0027].

Support for the amendment to Claim 21 can be found at paragraph [0027].

Support for the amendment to Claim 24 can be found at paragraph [0012] and [0032].

Support for the amendment to Claim 25 can be found at paragraph [0012] and [0033].

Support for the amendment to Claim 27 can be found at paragraph [0012] and [0035].

Support for the amendment to Claim 29 can be found at paragraph [0012] and [0017].

Support for the amendment to Claim 30 can be found at paragraph [0012] and [0017].

Support for the amendment to Claim 31 can be found at paragraph [0012] and [0018].

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Claims 14-28 and 31 have been previously allowed. The amendments to claims 14, 16, 19-21, 24, 25, 27 and 31 are presented merely to improve the readability of these claims.

Entry of the amendments to Claims 1, 2, 4, 6, 9-11, 14, 16, 19-21, 24, 25, 27 and 29-31 is respectfully requested.

Reconsideration of this application in view of the amendments made to the specification and claims and the foregoing remarks directed to claims 1-13, 29 and 30 is also respectfully requested.

The Claimed Invention

The claimed invention is directed to a method to reduce the imaging effluence of printing plates having a hydrophilic polymer containing thiosulfate groups. The claimed invention is also directed to printing plate precursors for lithography having a hydrophilic polymer containing thiosulfate groups with reduced effluence.

Upon thermal imaging, chemical and/or physical changes occur to the polymer containing the thiosulfate groups. The presence of the thiosulfate groups, however, can result in an objectionable effluence during imaging. According to the now claimed invention, the application of a water soluble top significantly reduces or eliminates the objectionable effluence that normally arises upon imaging of a printing plate having a hydrophilic polymer containing thiosulfate groups.

The claimed invention thus provides thermal printing plates having thiosulfate-containing polymers with reduced or eliminated effluence associated with the thiosulfate-containing polymers upon thermal imaging.

35 USC § 103(a) Rejection

The Examiner has rejected claims 1-13, 29 and 30 under 35 USC § 103(a) as being unpatentable over U.S. Pat. No. 5,985,514 to Zheng, et al. (Zheng) in view of U.S. Pat. No. 5,506,090 to Gardner, Jr. et al. (Gardner).

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U.S. Pat. No. 5,985,514 to Zheng, et al. (Zheng)

Zheng reports an imageable member composed of a hydrophilic imaging layer having a hydrophilic heat-sensitive polymer containing heat-activatable thiosulfate groups as well as optional photothermal conversion material.

It is the Examiner's position that the imaging layer of Zheng meets the present limitations for the coating composition of the claimed invention. The Examiner states that the heat-activatable thiosulfate group represented by structure I of Zheng is identical to the thiosulfate group of structure VIa of the present invention. The Examiner further states that when Structure I of Zheng includes an arylene group, the heat activatable thiosulfate group meets the present limitations for the thiosulfate group of Structure VIb of the present invention. Additionally, the Examiner states that the heat-activatable groups of Zheng comprise from about 10 to 100 mol% of all recurring units in the heat sensitive polymer, which has a molecular weight of at least 1,000 and preferably of at least 5,000. Further, the Examiner points out that Zheng reports that the polymers comprising the thiosulfate groups can be polymerized with one or more other ethylenically unsaturated polymerizable monomers such as acrylates, methacrylates, styrenes and acrylamides. According to the Examiner, the amount of the heat-sensitive polymer(s) used in the imaging layer of Zheng is at least 0.1 g/m² and preferably from about 0.1 to about 10 g/m² which gives an average dry thickness of from about 0.1 to about 10 micrometers. Additionally, the photothermal conversion material of Zheng can be an infrared absorbing dye.

The Examiner recognizes that Zheng contains no teaching of a water-soluble topcoat as recited in the now pending claims.

U.S. Pat. No. 5,506,090 to Gardner, Jr. et al. (Gardner)

Gardner reports a process for making shoot and run printing plates having a water-soluble protective topcoat layer. The shoot and run printing plate of Gardner is reported as being a photosensitive printing plate that does not require a development step and can use any photosensitive composition. [Col. 3, lines 27-33 and 64-66] The Examiner states that

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the protective top coat layer of Gardner may provide the printing plate with protection from contamination during handling, improved suppression of odors during imaging and improved roll-up performance on press. The Examiner further states that Gardner reports polymers useful in the preparation of topcoats that include polyacrylamide and polyvinylpyrrolidone. Additionally, according to the Examiner, topcoat of Gardner is capable of being removed after exposure on press by action of the fountain solution and/or the action of the press.

The Examiner is of the position that it would have been obvious to one of ordinary skill in the art to coat the imaging element of Zheng with a water soluble protective top coat to provide the imaging element with protection from contamination during handling, improved suppression of odors during imaging and improved roll-up performance on press based on the teachings of Zheng, wherein the imaging element comprises a support and a hydrophilic imaging layer containing a hydrophilic heat-sensitive polymer containing heat-activatable thiosulfate groups and a photothermal conversion material.

Applicants respectfully traverse the rejection because it would not have been obvious to one of ordinary skill in the art to coat the imaging element of Zheng with the water soluble protective top coat of Gardner to suppress effluence of a coating composition having a hydrophilic heat-sensitive polymer containing heat-activatable thiosulfate groups.

Although Zheng reports a coating composition having a hydrophilic heat-sensitive polymer containing heat-activatable thiosulfate groups, Zheng does not teach or suggest using a water-soluble topcoat layer to reduce effluence of the coating composition. Rather, Zheng merely reports a heat-sensitive imaging member that can be used with or without wet processing after imaging that provides a direct-write, negative-working lithographic printing plate that can be imaged without ablation [Col. 2, line 2-8] and without long ultra-violet light exposure times [Col 2, lines 17-22 and 31-36].

Further, Zheng specifically reports a preference for a single layer, this being a heat sensitive layer required for imaging. [Col. 4, lines 18-20] Where Zheng does report using layers in addition to the coating composition, Zheng does not add the layers to reduce effluence of the coating composition. Instead, the layers include heat sensitive layers, "subbing" layers to improve the adhesion of the final assemblage, slipping/matte layers

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coated on the backside of the support to improve handling and "feel" of the imaging member and photothermal conversion material provided in a separate layer. [Col. 3, lines 52-53, Col. 4, lines 6-7 and 15-17, Col. 11, lines 45-51]

Gardner reports a topcoat to reduce effluence of a photosensitive coating composition having a polymer with acid labile groups pendant from a polymer backbone such as polyacrylates and polymethacrylates [Col. 4, lines 38-67 and Col. 5, lines 1-18], not a coating composition having a hydrophilic heat-sensitive polymer containing heat-activatable thiosulfate groups. The photosensitive coating composition of Gardner does not even contain heat-activatable thiosulfate groups.

Zheng and Gardner do not provide any teaching or suggestion to provide a water soluble protective top coat to suppress effluence of a coating composition having a hydrophilic heat-sensitive polymer containing heat-activatable thiosulfate groups. Further, there is no teaching or suggestion in the references that predicts that any amount of experimentation with a water soluble topcoat will suppress effluence of a coating composition having a hydrophilic heat-sensitive polymer containing heat-activatable thiosulfate groups. Therefore, amended Claims 1, 2, 29 and 30 are not obvious over Zheng in view of Gardner and are in condition for allowance. Furthermore, because Claims 2-13 depend from an allowable independent claim they are also not obvious over Zheng in view of Gardner. Applicants respectfully request that the Examiner withdraw the rejection and allow Claims 1-13, 21 and 29-31.

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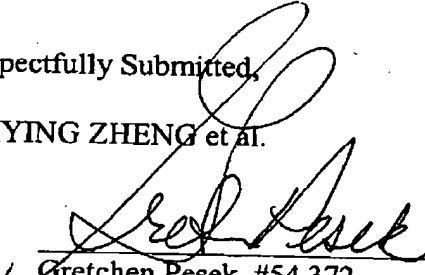
CONCLUSION

All pending claims are in condition for allowance. A notice to that effect is respectfully requested.

Respectfully Submitted,

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